

U.S.C.G. Merchant Marine Exam
Master/Chief Mate Offshore Supply Vessels
Q207 Navigation Problems – Oceans
(Sample Examination)

Choose the best answer to the following Multiple-Choice Questions

1. On 20 November your 1030 ZT DR position is LAT 27°16.0'N, LONG 157°18.6'E. You are on course 060°T at a speed of 20 knots. You observed 3 celestial bodies. Determine the latitude and longitude of your 1200 running fix.

NP-0012				
BODY	ZONE TIME	GHA	OBSERVED ALTITUDE (Ho)	DECLINATION
Moon	1030	259°24.4'	34°01.5'	N 9°47.3'
Sun	1116	202°30.5'	43°00.0'	S 19°38.0'
Venus	1200	162°57.7'	24°26.9'	S 26°02.4'

- A. LAT 27°16.8'N, LONG 157°30.5'E
- B. LAT 27°22.6'N, LONG 157°37.8'E
- C. LAT 27°29.7'N, LONG 157°43.0'E
- D. LAT 27°33.4'N, LONG 157°48.2'E

Correct answer: C

2. On 13 September your 1830 ZT DR position was LAT 23°03'S, LONG 105°16'E when you observe a faint unidentifiable star through a hole in the clouds. The star bore 132.3°T at a sextant altitude (hs) of 29°34.6'. The chronometer read 11h 24m 39s and is 5m 08s slow. The index error is 1.0' off the arc, and the height of eye is 52 feet. What star did you observe?
- A. Scheat
 - B. Sigma Capricorni
 - C. Alpha Indi
 - D. Beta Gruis

Correct answer: D

3. Using gnomonic tracking chart WOXZC 5270, determine which of the following statements about a voyage from San Francisco to San Bernardino Strait (LAT 13°00'N, LONG 125°30'E) is TRUE.
- A. A composite sailing should be used to avoid the Bonin Islands.
 - B. The entire track line is west of the Northern Hemisphere vertex.
 - C. Distance is measured using the length of a degree of longitude at the point of tangency.
 - D. You will cross the Northern Hemisphere vertex at the approximate longitude of 159°W.

Correct answer: D

4. On 3 February your 0547 zone time DR position is LAT 24°18.5'N, LONG 167°25.0'E. Considering their magnitude, azimuth, and altitude, which group includes the three bodies best suited for a fix at star time?
- A. Arcturus, Kochab, Venus
 - B. Regulus, Deneb, Antares
 - C. Jupiter, Denebola, Regulus
 - D. Altair, Saturn, Regulus

Correct answer: B

5. What is NOT an advantage of the rhumb line track over a great circle track?
- Plots as a straight line on Lambert conformal charts
 - Does not require constant course changes
 - Negligible increase in distance on east-west courses near the equator
 - Easily plotted on a Mercator chart

Correct answer: A

6. On 5 May your 1800 ZT DR position is LAT 26°11.5'N, LONG 65°35.0'W. You are on course 270°T at a speed of 12 knots. What will be the ZT of sunset at your vessel?
- 1825
 - 1840
 - 1857
 - 1901

Correct answer: C

7. On 13 October at 1847 ZT, your vessel's DR position is LAT 42°17.4' N, LONG 138°46.2' W. At approximately this time, you obtain a sextant altitude (hs) of Polaris reading 42°16.8', with an index error of 3.2' on the arc. Your chronometer reads 03h 45m 20s and is 1m 32s slow. What is your latitude by Polaris, given a height of eye of 44 feet?
- 42°09.1'N
 - 42°12.5'N
 - 42°16.0'N
 - 42°19.5'N

Correct answer: A

8. You desire to make good 152°T. The magnetic compass deviation is 4°E, the variation is 5°E, and the gyro error is 3°E. A southwesterly wind produces a 4° leeway. Which course would you steer per standard compass to make good the true course?
- 143°psc
 - 141°psc
 - 137°psc
 - 147°psc

Correct answer: D

9. On 30 July your 1030 ZT DR position is LAT 17°46'N, LONG 139°30'W. You are on course 129°T, speed 24 knots. Determine your 1200 position using the following observations of the Sun.

NP-0107

Zone Time	GHA	Declination	Ho
1220	138°25.0'	N 18°22.3'	88°43.3'
1226	139°55.0'	N 18°22.2'	88°24.0'

- LAT 17°24.0'N, LONG 138°59.8'W
- LAT 17°21.6'N, LONG 138°56.2'W
- LAT 17°18.7'N, LONG 139°07.6'W
- LAT 17°15.1'N, LONG 139°00.0'W

Correct answer: D

10. Determine the great circle distance and initial course from LAT 35°27.0'N, LONG 140°20.5'E to LAT 47°51.0'N, LONG 122°51.0'W.
- A. 4115 miles, 045°T
 - B. 4087 miles, 036°T
 - C. 4136 miles, 076°T
 - D. 4122 miles. 076°T

Correct answer: A

11. On September 9 your 2130 zone time (ZD +5) DR position is LAT 45°08'N, LONG 82°38'W. At that time, you observe Polaris bearing 000.5°pgc. The chronometer time of the observation is 02h 26m 09s, and the chronometer is 1m 43s slow. The variation is 8.7°W. What is the gyro error?
- A. 0.7°E
 - B. 1.2°E
 - C. 0.8°W
 - D. 9.4°W

Correct answer: A

12. On 3 May your 1009 zone time DR position is LAT 30°01.0'N, LONG 123°15.0'W. Your vessel is on course 330°T at a speed of 8.6 knots. What is the zone time of local apparent noon (LAN)?
- A. 1206
 - B. 1208
 - C. 1211
 - D. 1214

Correct answer: C

13. On 28 July your 0800 zone time (ZT) fix gives you a position of LAT 25°16.0'N, LONG 71°19.0'W. Your vessel is on course 026°T, and your speed is 17.5 knots. Local apparent noon (LAN) occurs at 1150 ZT, at which time a meridian altitude of the Sun's lower limb is observed. The observed altitude (Ho) for this sight is 82°28.7'. What is the latitude at 1200 ZT?
- A. 26°25.0'N
 - B. 26°27.6'N
 - C. 26°29.8'N
 - D. 26°32.0'N

Correct answer: B

14. You observe the lower limb of the Sun at a sextant altitude (hs) of 31°31.5' on 6 March. The index error is 2.5' on the arc. The height of eye is 76 feet. What is the observed altitude (Ho)?
- A. 31°35.3'
 - B. 31°36.7'
 - C. 31°38.2'
 - D. 31°39.5'

Correct answer: A

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15. Determine the distance from LAT 63°54.0'N, LONG 04°52.0'E to LAT 63°54.0'N, LONG 18°24.0'W by parallel sailing.
- A. 608.6 miles
 - B. 610.9 miles
 - C. 612.3 miles
 - D. 614.2 miles

Correct answer: D